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EXAMINER

TAKAOKA, DEAN O

ART UNIT PAPER NUMBER

2817

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

<b>Office Action Summary</b>	Application No. 10/729,682	Applicant(s) HILAL ET AL.	
	Examiner Dean O. Takaoka	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.  
 7) ☒ Claim(s) 4 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/5/03</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8, 9, 13, 14, 16, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang (U.S. Patent No. 6,483,415).

Claim 1:

Tang (Fig. 4a) shows a distributed coupler (where the balun coupler of Tang is a distributed coupler; where Tang shows two balanced ports, an isolated or grounded port and an unbalanced port and where Väisänen shows two output or symmetrical and balanced ports, an input or asymmetrical port and a grounded or isolated port, in an

Art Unit: 2817

identical or most nearly identical configuration to that shown by the Applicant, and where the coupler of Tang is a reciprocal device; further where any coupler, i.e. balun provides direction, thus the balanced couplers or baluns of Tang inherently comprises a directional coupler) comprising a first conductive line (Tang 401b) carrying a main signal between two end terminals and a second conductive line coupled to the first one between two terminals of which flows a sampled signal proportional to the main signal (e.g. coupled signal), a first capacitor (404) coupled to two end terminals of the first conductive line (401b) and a second capacitor (403) coupled to the two end terminals of the second conductive line (401a).

Claim 2:

Where the lines have a same length (shown in Fig. 4a).

Claim 8:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line, the second conductive line having third and fourth terminals (discussed in the reasons for rejection of claim 1 above).

Claim 9:

Further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Claim 13:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

Claim 14:

Where the central frequency of the coupler is between a few tens of MHz and a few tens of GHz (Fig. 8a).

Claim 16:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line (discussed in the reasons for rejection of claim 1 above).

Claim 17:

Where the second conductive line has third and fourth terminals, and further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Claim 20:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

Claims 1, 2, 8, 9, 13 – 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Väisänen (U.S. Patent No. 6,018,277).

Claim 1:

Väisänen (best shown in the prior art – Fig. 1a; or in the alternative where lines 10/40 and 20/30 in Figs. 2 – 4 are representations of equivalent dual planar or bi-level lines in Figs. 8a and 8b) shows a distributed coupler (where the coupler of Väisänen is a distributed coupler; where Väisänen shows two output or symmetrical and balanced ports, an input or asymmetrical port and a grounded or isolated port adjacent the asymmetrical port, in an identical or most nearly identical configuration to that shown by the Applicant, thus where the coupler of Väisänen is a reciprocal device; further where any coupler provides direction, thus the balanced coupler of Väisänen inherently comprises a directional couplers) comprising a first conductive line (connected to asymmetrical input) carrying a main signal between two end terminals and a second conductive line coupled to the first one between two terminals of which flows a sampled signal proportional to the main signal (e.g. coupled signal), a first capacitor coupled to two end terminals of the first conductive line (connected to asymmetrical input) and a second capacitor coupled to the two end terminals of the second conductive line (connected to symmetrical outputs).

Claim 2:

Where the lines have a same length (shown in the prior art – Fig. 1a).

Claim 8:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line, the second conductive line

Art Unit: 2817

having third and fourth terminals (discussed in the reasons for rejection of claim 1 above).

Claim 9:

Further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Claim 13:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

Claim 14:

Where the central frequency of the coupler is between a few tens of MHz and a few tens of GHz (i.e. 900MHz – col. 5, line 64).

Claim 15:

Where the second terminal is coupled to an antenna (Fig. 9).

Claim 16:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line (discussed in the reasons for rejection of claim 1 above).

Claim 17:

Where the second conductive line has third and fourth terminals, and further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Art Unit: 2817

Claim 20:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

Claims 1 – 3, 7 – 9, 11 – 14, 16, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ojha et al. (Reduced Size RF Coupler Design for Specialized Load Requirements), Applicant's prior art cited in the IDS dated December 5, 2003.

Claim 1:

Ojha et al. (Fig. 2) shows a distributed coupler (where Ojha et al. shows an isolated or grounded port and a two input/output ports and a single input/output port in an identical or most nearly identical configuration to that shown by the Applicant; further where any coupler provides direction, thus the coupler of Ojha et al. inherently being a directional coupler) comprising a first conductive line (to port 1) carrying a main signal between two end terminals (port 1 and grounded port) and a second conductive line (to port 2) coupled to the first one between two terminals (port 2 and port 3) of which flows a sampled signal proportional to the main signal (e.g. coupled signal), two capacitors (both labeled  $C = 6.3\text{pf}$ ) respectively connecting the two terminals of each of the lines.

Claim 2:

Where the lines have a same length ( $L = 255$ ).

Claim 3:

Where the capacitors have the same value ( $C = 6.3\text{pf}$ ).

Claim 7:



Where the first capacitor has a value ranging between 0.1pf and 10pf ( $C = 6.3\text{pf}$ ), the central frequency of the coupler ranging between a few tens of MHz and a few tens of GHz (i.e. 900MHz).

Claim 8:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line, the second conductive line having third and fourth terminals (discussed in the reasons for rejection of claim 1 above).

Claim 9:

Further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Claim 11:

Where at least one capacitor electrode is formed in the same metallization level in which is formed the first conductive line (inherent where Ojha et al. teaches a device with microstrip lines and where the coupler is formed on the substrate, thus where at least one capacitor electrode formed on the same metallization level in which is formed the first conductive line to connect to the line).

Claim 12:

Where the first and second capacitors have values ranging between 0.1pf and 10pf ( $C = 6.3\text{pf}$ ),

Claim 13:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

Claim 14:

Where the central frequency of the coupler is between a few tens of MHz and a few tens of GHz (i.e. 900MHz).

Claim 16:

A first conductive line that carries a signal from the first terminal to a second terminal; a first capacitor connected to the first terminal and the second terminal; and a second conductive line coupled to the first conductive line (discussed in the reasons for rejection of claim 1 above).

Claim 17:

Where the second conductive line has third and fourth terminals, and further comprising a second capacitor connected to the third terminal and the fourth terminal (discussed in the reasons for rejection of claim 1 above).

Claim 20:

Where the distributed coupler is a directional coupler (discussed in the reasons for rejection of claim 1 above).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 6, 10, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha et al. in view of Shumovich (U.S. Patent No. 6,825,738), prior art cited by the Examiner (PTO-892) in the Office action dated February 23, 2005.

Claims 5, 10 and 18:

Ojha et al. teaches the directional distributed coupler comprising first and second conductive lines, discussed in the reasons for rejection of claims 1, 8 and 16 above, but does not teach where each conductive line comprises at least two parallel sections between its end terminals where sections of the two lines are interleaved (claim 5) or where the second conductive line is connected to a control circuit, the control circuit being connected to an amplifier that supplies the signal to the first terminal (claims 10 and 18).

Shumovich (Figs. 1 and 5) shows a similar distributed directional coupler comprising first and second conductive lines where (Fig. 5) each conductive line comprises at least two parallel sections between its end terminals where sections of the two lines are interleaved (170/172) and (Fig. 1) where second conductive line (14) is connected to a control circuit (36), the control circuit being connected to an amplifier (30) that supplies the signal to the first terminal.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the coupler disclosed by Ojha et al. with the coupler disclosed by Shumovich. Such a modification would have realized the advantageous providing a smaller size device (Shumovich – abstract); where both Ojha et al. and Shumovich are directed to reduction in size of high frequency couplers; further

where Shumovich provides a practical circuit implementation of the coupler device where the showing of Ojha et al. is only for the coupler device thus suggesting the obviousness of the modification.

Claim 6:

Where at least one capacitor electrode is formed in the same metallization level in which is formed the first conductive line (inherent where Ojha et al. teaches a device with microstrip lines and where the coupler is formed on the substrate, thus where at least one capacitor electrode formed on the same metallization level in which is formed the first conductive line to connect to the line).

Claim 19:

Where the control circuit is configured to turn off the amplifier when a voltage of the second conductive line exceeds a threshold (obvious where a detector signal of Shumovich shown in Fig. 1 controls the amplifier power – col. lines 19-24).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 – 20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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September 13, 2005